

DynaStage™ Perforating System

MINIMIZE RISKS WITH ADVANCED DETONATOR TECHNOLOGY



Perforating has always been one of the most dangerous wellsite activities. Despite advances in perforating gun technology, better crew training, and improved operational procedures, perforating accidents can still occur. If they do, they can result in serious injuries or wellsite fatalities.

Most perforating accidents happen in the aftermath of a misrun or during/after gun-arming, a critical pre-run step in preparing a gun to go downhole. During arming, the electrical connection is made to the gun hotwire and the ballistic connection is made to the detonating cord, moving the perforating system to a stage where it can be initiated.

Perforating safety guidelines, which outline recommended steps to minimize risk, can be found on the [IADC website](#). Among these steps are:

- 1) Suspend perforating gun-loading during electrical or static-generating dust storms
- 2) Do not conduct perforating operations when a mobile transmitter is operating within 150 feet of the well
- 3) Cell phones should be turned off and collected by the person-in-charge to ensure compliance

With the growing number of cell phones and other communication devices in use at or around the wellsite, it's becoming difficult to silence all transmission devices and ensure compliance during perforating operations. As the pace of well operations increases and wellsite activities grow in service intensity, pausing parallel wellsite operations when arming and running perforating guns becomes impractical, and drives up completion costs.

When DynaEnergetics set out to design a new type of detonator, we knew our customers wanted a detonator that was easy to install and use. The demands of the next generation of detonator would need to elevate perforating safety and service quality to levels never before seen.



We designed a detonator system that greatly reduces the chance of mishaps, misruns and misfires. We coupled it with the DynaStage perforating gun, which is fully factory-assembled and requires no wiring at the wellsite. There are no electrical or ballistic connections to be made. The only procedure is to install the simple plug-and-go detonator into the gun, test and run downhole.

This system not only improves safety, but also reduces training needs and accelerates the learning curve for less-experienced field personnel.

A key feature of the DynaEnergetics detonator is that it is intrinsically safe, which means that the equipment is incapable of releasing sufficient electrical or thermal energy, under normal or abnormal conditions, to cause ignition. These detonators cannot be energized by AC or DC electrical power, batteries, induced static electricity, a lightning strike, or an accidental Megger test of a wireline cable. A review of [perforating accident reports](#) available online from the US Department of Labor makes you ponder how many serious accidents could have been prevented—and how many lives could have been saved—by using detonators that were intrinsically safe.

Using DynaStage system detonators allows parallel wellsite operations to be conducted without the worry of powering down transmitters or ensuring radio silence. The need for an exclusion zone or minimum safe distance around the wellhead is virtually eliminated. Normal wellsite operations can continue while the gun string is lowered into and raised from the well. This reduces invisible lost time during perforating operations while greatly limiting safety risks to personnel handling the system.

Since introducing this new intrinsically safe detonator technology, DynaEnergetics has provided the industry with more than two million guns and has had zero recordable safety incidents. To achieve near-perfect reliability, we are continually refining system components, manufacturing and assembly processes, and wellsite operational procedures. Our efficiency rate now exceeds 99.9% and continues to increase, making the DynaEnergetics detonator the best choice in perforating for safety and operational performance.